

**REMARKS**

Claims 1-135 are all the claims pending in the application.

Claims 54, 56-60, and 134 are rejected under 35 U.S.C. 102(e) as being anticipated by Craft (U.S. Patent No. 6,687,758).

Claims 1, 3-8, 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Berg.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Berg in further view of Heider.

Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Berg in further view of Bailey.

Claims 15-32, 35-42 and 45-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Berg in further view of Grun.

Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Berg and Grun in further view of Craft II (U.S. Patent No. 6,697,868).

Claims 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Berg and Grun in further view of Anand.

Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Heider.

Claims 61 and 135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Kitai.

Claims 62-72, 75-82, and 85-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Kitai in further view of Grun.

Claims 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Kitai and Grun in further view of Craft II (U.S. Patent No. 6,697,868).

Claims 83-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Kitai and Grun in further view of Anand.

Claims 94-104, 107-114, and 117-125 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Grun.

Claims 105-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Grun in further view of Craft II (U.S. Patent No. 6,697,868).

Claims 115-116 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Grun in further view of Anand.

Claims 126-133 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (U.S. Patent No. 6,687,758) in view of Grun in further view of Wang.

The Applicants traverse the rejections and request for reconsideration.

**Claim Rejections Under 35 USC § 102**

Claims 54, 56 – 60, and 134 are rejected as being anticipated by Craft.

The difference between a stateful implementation and a stateless implementation of networking communication is well-defined in the art, a brief discussion of which is provided

herein. According to the Encyclopedia of Networking and Telecommunication (2001, Tom Sheldon and Big Sur Multimedia) “Keeping a *state* or being *stateful* means that some device is keeping track of another device or a connection, either temporarily or over a long period of time.” Therefore “...a *stateful connection* is one in which some information about a connection between two systems is retained for future use.” The source further notes that “... a *stateless connection* is one in which no information is retained by either sender or receiver.” The Internet Protocol, is an example of a stateless interaction. Each packet travels entirely on its own without reference to any other packet. The upper layer Transmission Control Protocol - TCP - does relate packets to each other, but uses the information within the packet rather than some external information to do this.

The above comparison highlights the differences between the present invention and Craft. The Examiner refers to column 3, lines 7-9 of Craft where it is stated that “*The INICs 22 and 25 have protocol processing mechanisms 26-29 that process data link, network and transport layer headers of each packet received by that INIC.*” This is a clear indication of a system which is a stateless system as it asserts that **only headers of the packet for the connection are processed without the context**. The connection's context is therefore not owned by the INIC, and updates of the context are left to host 20. This is further evident from Fig. 1 of Craft that shows the TCP/IP stack 60 and 62 as being handled by host 20. The present Application, on the other hand, shows a solution for a stateful implementation of a layer 5 network interface card (L5NIC).

**Claim 54.** As noted above, the Examiner is believed to be incorrectly construing Craft. While Craft discloses a stateless operation, the present invention (as recited in claim 54) is

devoted to a stateful operation of the L5NIC. Claim 54 is further amended to clarify the above distinction. Specifically a connection context is transferred to the interface card and network functions are performed that include a full transportation connection context.

**Claim 56.** The claim specifically notes that “...data from the network is received and processed by the network interface card.” Craft does not disclose receiving and processing data from the network. In fact, Craft is very specific to note that only the headers, not the data, is handled by the INIC. Therefore, the claim should be allowed, in addition to it being allowable as being dependent on an allowable claim.

**Claims 57-60.** These claims should be allowed for at least being dependent claims of an allowable claim.

**Claim 134.** Examiner is believed to be incorrectly contending that the layer 5 is the network layer of the OSI standard. In fact, layer 5 is the session layer. A person skilled-in-the-art would note that this layer is responsible for the management and termination of connections between applications. The session layer sets up, coordinates, and terminates conversations, exchanges, and dialogues between the applications at each end. Craft notes that “The processing of the session layer header by ATCP stack 62 identifies the data as belonging to the file and indicates the size of the message, which are used by a host 20 file system to reserve a destination for the data in storage 23.” (column 4, lines 17-21). This provides further clarification of the difference between the Application and Craft. Therefore, the rejection of the Examiner should be withdrawn and the claim allowed.

**Claim Rejections Under 35 USC § 103**

Rejection of claims 1, 3 – 8, 10 – 12, and 14 as being unpatentable over Craft in view of US Patent Application No. 2002/0112085 by Berg (hereinafter “Berg”).

**Claim 1.** The Examiner is believed to be incorrectly contending that “*... an upper layer protocol (ULP) is disclosed in Craft....*” A person skilled-in-the-art would know that a ULP is any protocol residing in the standard OSI model layer 5 or above. In the reference made by the Examiner it is clear that Craft handles all but these layers, stating that the layers handled are “*...data link, network and transport layer headers...*” known as layers 2, 3, and 4 respectively. Furthermore, Craft states that “*The port aggregation driver 66 is transparent to upper protocol layers such as TCP/IP stack 60, ATCP stack 62, or integrated Free BSD stack. That is, the upper protocol layers are not aware that they are communicating across a logical group of network interfaces.*” (column 5, lines 38-42) providing further evidence that the ULP is not considered to be handled by the INIC of Craft as required by the present invention. As TCP handling is not considered a ULP, all the argumentation provided by the Examiner is not believed to be relevant.

The Examiner admits that Craft does not suggest the ULP handler taking over and performing at least one session layer function. The Examiner incorrectly alleges that Berg overcomes this deficiency. Berg specifically states in [192-193] that “*... the first server’s INIC is operable to: (a) selecting a server for maintaining the sessions...*” providing a clear indication that the session layer is not handled by Berg’s INIC but rather by a server selected by the INIC. In fact, by not having the INIC, but a server, handle the sessions Berg is teachings away from the present invention. Therefore, a skilled artisan would not have found it obvious to make the NIC

of the present invention from the combined teachings of Craft and Berg. Claim 1 is amended to further clarify its scope.

**Claim 3.** Claim 3 is allowable at least because of its dependency. Further, it specifically recites that “*...data from the network is received and processed by the network interface card.*” Craft does not suggest this feature. In fact, Craft is very specific to note that only the headers, not the data, is handled by the INIC.

**Claims 4-7.** These claims should be allowed for at least being dependent claims of an allowable claim.

**Claim 8.** Claim 8 is allowable at least because of its dependency. Further, while the INIC driver communicates with the protocol stack, Examiner is believed to be incorrectly concluding that it is capable of communicating at the ULP level.

**Claims 11-12.** These claims should be allowed for at least being dependent claims of an allowable claim.

**Claim 14.** Claim 14 is allowable at least because of its dependency. Examiner is believed to be incorrectly identifying the fast path connection as a session of the OSI standard networking layers. The function of ATCP 62 is, as far as can be gleaned from Craft, a mere aggregator of TCP level packets. The expansion of ATCP is not spelled out in Craft. However, it is clear from Craft that the ATCP has nothing to do with session layer processing, as fast path and session layer processing are two different issues.

Rejection of claim 2 as being unpatentable over Craft in view of Berg, and further in view of U.S. Patent No. 5,276,863 by Heider (hereinafter “Heider”).

**Claim 2.** Claim 2 is dependent on claim 1, and therefore, is allowable for the same reasons. Moreover, Heider does not overcome the deficiencies noted above in the combined teachings of Craft and Berg. Further, while the OSI network model itself is admittedly well-known the features cited in the claim, namely, a network interface card implementing layer 5 of the OSI is believed to be not suggested by the combined teachings of Craft/Berg/Heider. The Applicants respectfully submit that the layer 4 (transport) cannot be extended to the layer 5 (session) as the Examiner appears to be alleging. Session layer constructs are not network packets any more. They are randomly layered over layer 4 packets, and a stateful termination and reassembly of the layer 4 byte stream is needed in addition to layer 5 protocol data unit (PDU) delineation. The combined teaching of the cited references do not suggest such capabilities.

Rejection of claims 9 and 13 as being unpatentable over Craft in view of Berg, and further in view of U.S. Patent Application No. 2002/0107971 by Bailey (hereinafter “Bailey”).

**Claims 9 and 13.** These claims should be allowed for at least being dependent claims of an allowable claim. Moreover, Bailey does not overcome the deficiencies noted in the combined teachings of Craft and Berg.

Rejection of claims 15-32, 35-42, and 45-53 as being unpatentable over Craft in view of Berg, and further in view of U.S. Patent No. 6,629,166 by Grun (hereinafter “Grun”).

**Claim 15.** Claim 15 is dependent on claim 1, and therefore, should be allowed for the same reasons. Moreover, Grun does not overcome the deficiencies noted in the combined teachings of Craft/Berg. Moreover, claim 15 requires primitives for acceleration purposes. The combined teachings of Craft/Berg and Grun does not suggest this feature.

**Claim 16.** Claim 16 is dependent on claim 1, and therefore, should be allowed for the same reasons. Further, the cited references do not teach that each of the INIC's of Craft would handle only a subset of the primitives.

**Claim 17.** Claim 17 is dependent on claim 1, and therefore, should be allowed for the same reasons. Further, as noted above nothing in Craft shows an ability to operate with a ULP. Element 64 interfaces clearly with port aggregator 66 and through it with TCP/IP stack 60 and ATCP 62. None deal with ULP in contrast to what is asserted erroneously by the Examiner.

**Claim 18.** Claim 18 is dependent on claim 1, and therefore, should be allowed for the same reasons. Further, the Examiner is believed to be incorrectly concluding that TCP connections are handled by the INIC of Craft. In fact, in Craft it is performed by host 20.

**Claim 19.** The claim should be allowed for being dependent on an allowable claim.

**Claim 20-21.** Claims 20-21 are dependent on claim 1, and therefore, should be allowed for the same reasons. Further, the cited references do not suggest the connection mechanism as recited in the claims.

**Claim 22.** Claim 22 is dependent on claim 1, and therefore, should be allowed for the same reasons. This claim is amended to further clarify its scope.

**Claims 23-24.** Claims 23-24 are dependent on claim 1, and therefore, should be allowed for the same reasons. These claims are amended to further clarify their scope.

**Claims 25-28.** These claims should be allowed for at least being dependent claims of an allowable claim.

**Claim 29.** Claim 29 is dependent on claim 1, and therefore, should be allowed for the same reasons. The passages cited by the Examiner are believed to relate to the case of a slow-path failure and has nothing to do with the acceleration functions. There is a need to perform a gradual disconnect to ensure a graceful disconnection. Craft does not suggest this feature. Therefore the rejection should be withdrawn and the claim allowed.

**Claims 30-32.** These claims should be allowed for at least being dependent claims of an allowable claim.

**Claim 35.** Claim 35 is dependent on claim 1, and therefore, should be allowed for the same reasons. The passages referred to by the Examiner are believed to be relating to a slow-path operation, not a fast path operation. While it is well-known in the art as to how to use the slow-path to transfer data, the present invention relates to the acceleration primitives thereof for the acceleration of data transfer.

**Claim 36-38.** These claims should be allowed for at least being dependent claims of an allowable claim.

**Claim 39.** Claim 39 is dependent on claim 1, and therefore, should be allowed for the same reasons. Unlike the Examiner's contention, Craft only shows that such synchronization is required and that a flush may take place. However, nothing in Craft suggests the use of an acceleration primitive to achieve such a result.

**Claim 40-42.** These claims should be allowed for at least being dependent claims of an allowable claim.

**Claim 45.** Claim 45 is dependent on claim 1, and therefore, should be allowed for the same reasons. Unlike the Examiner's contention, the cited reference does not suggest the *connection receive notify* acceleration primitive and the functionality thereof. The Examiner is using hindsight to establish such a teaching. Therefore the claim should be allowed.

**Claim 46-53.** These claims should be allowed for at least being dependent claims of an allowable claim.

Rejection of claims 33-34 as being unpatentable over Craft in view of Berg, in view of Grun, and further in view of U.S. Patent No. 6,697,868 by Craft (hereinafter "Craft II").

**Claim 33.** Claim 33 is dependent on claim 1, and therefore, should be allowed for the same reasons. The Examiner makes reference to Craft II closing command, however, the Examiner fails to show the details of the close command as they appear in column 8 lines 52-58. Specifically, Craft II does not show the restriction of closing the write side of a connection of the NIC.

**Claim 34.** The claim should be allowed for being dependent on an allowable claim.

Rejection of claims 43-44 as being unpatentable over Craft in view of Berg, in view of Grun, and further in view of U.S. Patent No. 6,141,705 by Anand et al. (hereinafter "Anand").

**Claim 43-44.** These claims should be allowed for at least being dependent claims of an allowable claim. Moreover, Anand does not overcome the deficiencies noted above in the teachings of Craft and Berg.

Rejection of claim 55 as being unpatentable over Craft in view of Heider.

**Claim 55.** Claim 55 is dependent on claim 53, and therefore, should be allowed for the same reasons. As noted above, the network layer of the OSI model is not layer 5, which is the session layer, as known to those skilled-in-the-art.

Rejection of claims 61 and 135 as being unpatentable over Craft in view of U.S. Patent No. 5,948,069 by Kitai et al. (hereinafter “Kitai”).

**Claim 61.** The Examiner’s contentions are believed to be incorrect for at least the following reasons. The TAP is not believed to be suggested by the disclosure of Craft based on column 3, lines 56-58. While Craft suggests sending something for the purpose of off-loading in column 3, lines 15-18, it does not suggest that a communication take places with a TCP handler on the Craft INIC, other than a capability of handling transport headers, column 3, lines 7-9. Hence, only a limited capability exists, where the TCP is controlled from the host 20 in general and ATCP 62 in particular. Nothing indicates a capability of handling directly from a ULP driver. The Examiner further incorrectly contends that in column 3, lines 43-46 a notification command to a ULP is disclosed by Craft. However, clearly in this citation, packets are discussed. A person skilled-in-the-art would have known that packets are not part of the ULP layers. The present invention (as recited in claim 61) is not suggested by Craft for the above reasons. Moreover, Kitai does not overcome the deficiencies noted in the teachings of Craft.

**Claim 135.** As noted above the network layer of the OSI model is not layer 5 which is the session layer, as known to those skilled-in-the-art. Therefore, and for the fact that this is a claim dependent on allowable claims it should be allowed.

Rejection of claims 62-72, 75-82, and 85-93 as being unpatentable over Craft in view of Kitai, and further in view of Grun.

**Claim 62.** Claim 62 is dependent on claim 61, and therefore, should be allowed for the same reasons. Further, while Grun discloses a messaging system, such messaging system is not target to achieve an acceleration using acceleration primitives. Rather, it is a means of communication between two IO devices.

**Claims 63-72, 75-82, and 85-93.** These claims should be allowed for at least being dependent claims of an allowable claim.

Rejection of claims 73-74 as being unpatentable over Craft in view of Kitai, Grun, and further in view of Craft II.

**Claim 73.** Claim 73 is dependent on claim 61, and therefore, should be allowed for the same reasons. Further, the limitation of graceful closing of a write side connection of a NIC is not suggested in any of the patents cited by the Examiner, nor does the combination lead to such conclusion.

**Claim 74.** Claim 74 is dependent on claim 61, and therefore, should be allowed for the same reasons. Moreover, as Craft has a stateless implementation, Craft is not capable of performing such a task in the manner disclosed in the claim.

Rejection of claims 83-84 as being unpatentable over Craft in view of Kitai, Grun, and further in view of Anand.

**Claim 83.** Claim 83 is dependent on claim 61, and therefore, should be allowed for the same reasons. Further, the passages referred to by the Examiner teaches only that an indication is sent when a transfer is complete. The restriction of notifying upon a successful transfer of an amount of data is not show in Anand.

**Claim 84.** The claim should be allowed for being dependent on an allowable claim.

Rejection of claims 94-104, 107-114, and 117-125 as being unpatentable over Craft in view of Grun.

**Claim 94.** Claim 94 is dependent on claim 61, and therefore, should be allowed for the same reasons. Claim 94 is amended to further clarify its scope.

**Claims 95-104, 107-114, and 117-125.** These claims should be allowed for at least being dependent claims of an allowable claim.

Rejection of claims 105-106 as being unpatentable over Craft in view of Grun and further in view of Craft II.

**Claim 105.** Claim 105 is dependent on claim 61, and therefore, should be allowed for the same reasons. Further, as noted above neither references made by the Examiner show the graceful close of a write side of a connection of a NIC.

**Claim 106.** The claim should be allowed for being dependent on an allowable claim.

Rejection of claims 115-116 as being unpatentable over Craft in view of Grun and further in view of Anand.

**Claim 115.** Claim 115 is dependent on claim 1, and therefore, should be allowed for the same reasons. Further, as noted above, the offload of an L5NIC in accordance with the disclosed invention is of a stateful nature. Therefore, the offload is such that it allows the L5NIC the full control over the process, unlike the case of the prior art solutions cited by the Examiner.

**Claim 116.** The claim should be allowed for being dependent on an allowable claim.

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Patent Application No.: 10/775,069

Attorney Docket No.: Q74103

Rejection of claims 126-133 as being unpatentable over Craft in view of Grun and further in view of U.S. Patent Application No. 2004/0015591 by Wang (hereinafter "Wang").

**Claims 126-133.** These claims should be allowed for at least being dependent claims of an allowable claim.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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